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09/823,372	03/30/2001	John E. Dolan	KLR 7146.109	7358
7590	11/12/2004		EXAMINER	
Kevin L. Russell 601 SW Second Ave., Suite 1600 Portland, OR 97204-3157			THOMPSON, JAMES A	
			ART UNIT	PAPER NUMBER

2624

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/823,372

Applicant(s)

DOLAN ET AL.

Examiner

James A Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because the abstract merely states the technical area to which the disclosure relates. The abstract does not include any description of what Applicant considers to be new in the art or a basic, concise description of the invention. Correction is required. See MPEP § 608.01(b).

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***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant uses functional language in claims 1, 5, 6, 9, 12, 13 and 14 and method steps in claims 17, 18, 19, 24, 25, 29, 30, 31, 32, 37 and 38 without corresponding means for performing the functions or method steps described. For example, element (c) of claim 1 specifically recites that "said imaging system determines...". The use of functional language in claims 1, 5, 6, 9, 12 and 13 and method steps in claims 17, 18, 19, 24, 25, 29, 30, 31, 32, 37 and 38 does not establish definite boundaries defining the subject matter. Said functional language and method steps are not used in association with elements of the apparatus to define a particular capability or purpose that is served by the recited elements. Applicant is advised to refer to MPEP § 2173.05 (g).

The remaining claims are dependent, either directly or indirectly, upon the claims specifically cited. Therefore, the remaining claims are also rejected under 35 U.S.C. 112, second paragraph.

4. Claims 4-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point

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out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 specifically recites the limitation "said second background color" in line 1. There is insufficient antecedent basis for this limitation in the claim.

5. Claims 30-33 and 36-39 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 specifically recites "non-generally vertical edges" and claim 36 specifically recites "non-generally horizontal edges". The meanings of "non-generally vertical edges" and "non-generally horizontal edges" are not readily apparent and Applicant does not define said meanings in the specification. Does Applicant define "non-generally vertical edges" to mean "edges that are skewed in a direction that is more vertical than horizontal" and define "non-generally horizontal edges" to mean "edges that are skewed in a direction that is more horizontal than vertical"? These definitions will be used by Examiner in examining the claims over the prior art.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -  
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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7. Claims 1, 14-21, and 28-39 are rejected under 35 U.S.C. 102(a) as being anticipated by Amidei (US Patent 5,995,661).

**Regarding claim 1:** Amidei discloses an imaging system (figure 1 of Amidei) comprising an imaging device (figure 1(11) of Amidei) sensing an object (column 3, lines 6-9 of Amidei).

Said system further comprises a backing in opposing relationship with said object, as shown in figure 1 of Amidei and pointed out in the figure below ("image backing").

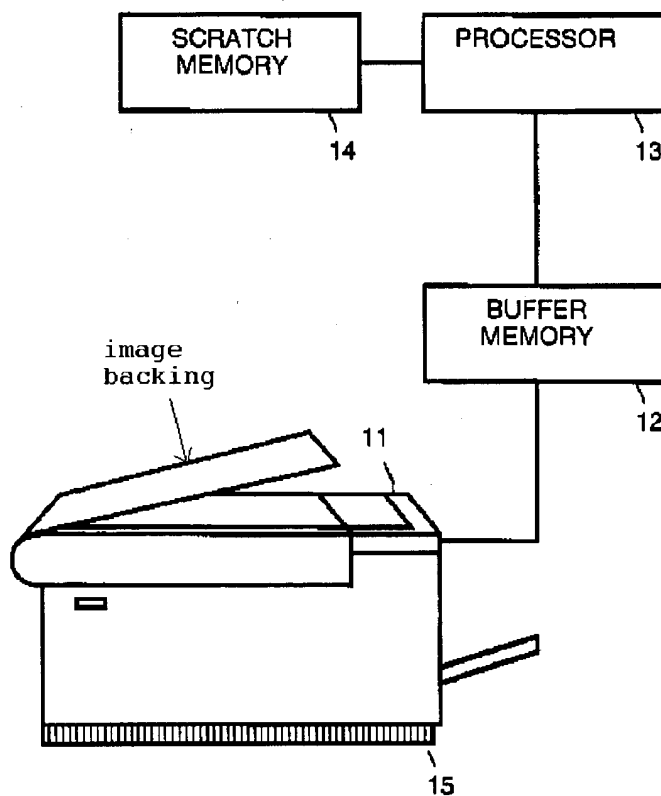


FIGURE 1

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As is well-known in the art, the inside of a scanner cover is used as the backing of the object to be scanned and is in a physically opposing relationship to said object.

Further, said imaging system determines at least one general bounding region of said object (column 3, lines 10-12 of Amidei), based at least in part on a spatial determination of said general bounding region having sufficient spatial extent (column 3, lines 17-22 of Amidei). Since the horizontal and vertical edges of a scanned image can be determined (column 4, lines 10-12 of Amidei) and a bounding box formed based on said horizontal and vertical edges (column 3, lines 17-22 of Amidei), then said bounding region has sufficient spatial extent.

**Regarding claim 14:** Amidei discloses that an image obtained from sensing said object has a plurality of horizontal rows of pixels, as demonstrated by the setup of the horizontal edge processing (column 6, lines 58-61 of Amidei). Further, said imaging system groups said horizontal rows of pixels in a plurality of groups, each of said groups including a plurality of said horizontal rows of pixels (column 7, lines 17-19 and lines 27-32 of Amidei). The horizontal rows are grouped in groups of three, the current row, the row above the current row (column 7, lines 17-19 of Amidei), and the row below the current row (column 7, lines 27-32 of Amidei). Further, said imaging system computes a statistical measure in a direction transverse to said horizontal row of pixels, using said statistical in determining said at least one boundary of said object (column 6, lines 33-37 of Amidei). A measure of the difference between rows is measured for each set of rows and the difference are thresholded to determine if a horizontal edge exists (column 6, lines 33-37 of Amidei). Since the difference is between rows,

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the computation is performed in the transverse direction, thus determining the local gradient in the vertical direction.

**Regarding claims 15 and 16:** Amidei discloses that an image obtained from sensing said object has a plurality of vertical columns of pixels, as demonstrated by the setup of vertical edge processing (column 5, lines 1-9 of Amidei). Further, said imaging system groups said vertical columns of pixels in a plurality of groups, each of said groups including a plurality of said vertical columns of pixels (column 5, lines 20-29 of Amidei). Vertical columns are grouped in groups of three, the current column ( $i$ ), the column to the left of the current column ( $i-1$ ), and the column to the right of the current column ( $i+1$ ), for the computation of  $\text{temp1}$  (column 5, lines 20-29 of Amidei). Further, said imaging system computes a statistical measure in a direction transverse to said vertical column of pixels, using said statistical in determining said at least one boundary of said object (column 4, lines 60-64 of Amidei). A measure of the difference between columns is measured for each pair of columns and the differences are thresholded to determine if a vertical edge exists (column 4, lines 60-64 of Amidei). Since the difference is between columns, the computation is performed in the transverse direction, thus determining the local gradient in the horizontal direction.

**Regarding claims 17, 18 and 19:** Amidei discloses determining edges within the data determined as a result of computing said statistical measure(s) (column 4, lines 60-64 and column 6, lines 33-37 of Amidei).

**Regarding claim 20:** Amidei discloses that a set of statistical measures in a direction traverse to said horizontal row of pixels from a plurality of said groups are statistically



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processed for determining said at least one boundary of said object (column 6, lines 43-49 and lines 56-61 of Amidei). The current statistics which are used for horizontal edge detection are based upon the values obtained in previous iterations (column 6, lines 43-49 and lines 56-61 of Amidei). Therefore, the statistical measures are statistically processed from the plurality of said groups as the horizontal edge detection process iterates.

**Regarding claim 21:** Amidei discloses that a set of statistical measures in a direction traverse to said vertical column of pixels from a plurality of said groups are statistically processed for determining said at least one boundary of said object (column 5, lines 10-19 and lines 30-33 of Amidei). The current statistics which are used for vertical edge detection are based upon the values obtained in previous iterations (column 5, lines 10-19 and lines 30-33 of Amidei). Therefore, the statistical measures are statistically processed from the plurality of said groups as the vertical edge detection process iterates.

**Regarding claim 28:** Amidei discloses that an image obtained from sensing said object has a plurality of horizontal rows of pixels, as demonstrated by the setup of the horizontal edge processing (column 6, lines 58-61 of Amidei).

**Regarding claim 29:** Amidei discloses that said spatial determination determines, based upon said horizontal row of pixels, regions including generally vertical edges (column 6, lines 43-49 of Amidei). The horizontal row of pixels are analyzed (column 6, lines 43-48 of Amidei) and determine edges in a generally vertical direction ("directly adjacent") (column 6, lines 48-49 of Amidei).

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**Regarding claim 30:** Amidei discloses that said spatial determination determines, based upon said horizontal row of pixels, regions of non-generally vertical edges (column 6, lines 43-49 of Amidei). The horizontal row of pixels are analyzed (column 6, lines 43-48 of Amidei) and determine edges in a non-generally vertical direction ("from as much as a 45 degree angle") (column 6, lines 48-49 of Amidei).

**Regarding claim 31:** Amidei discloses determining regions within said horizontal rows of pixels as potential generally vertical edges (column 4, lines 60-64 of Amidei). If in the first step, a vertical edge is determined between a pixel and its neighbor to the right (column 4, lines 60-64 of Amidei), then the edge is clearly a generally vertical edge, as opposed to non-generally vertical edges that must be merged later (column 5, lines 30-35 of Amidei).

**Regarding claim 32:** Amidei discloses modifying said potentially generally vertical edges as non-generally vertical edges (column 5, lines 30-35 of Amidei) based upon a spatial determination (column 5, lines 57-64 of Amidei). The potentially generally vertical edges can be merged at just over a 45 degree angle (column 5, lines 30-35 of Amidei) and then determined to actually be an edge based on a spatial analysis (column 5, lines 57-64 of Amidei). If merged at just over a 45 degree angle and determined to be an edge, then a potentially generally vertical edge is modified to be a non-generally vertical edge.

**Regarding claim 33:** Amidei discloses that said generally vertical edge is transverse to said horizontal row of pixels (column 4, lines 60-62 of Amidei). A vertical edge is checked by checking pixels in the horizontal direction (column 4, lines

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60-62 of Amidei). Therefore, said vertical edge is transverse to said horizontal row of pixels.

**Regarding claim 34:** Amidei discloses that an image obtained from sensing said object has a plurality of vertical columns of pixels, as demonstrated by the setup of vertical edge processing (column 5, lines 1-9 of Amidei).

**Regarding claim 35:** Amidei discloses that said spatial determination determines, based upon said vertical columns of pixels, regions including generally horizontal edges ("directly adjacent") (column 7, lines 27-34 of Amidei).

**Regarding claim 36:** Amidei discloses that said spatial determination determines, based upon said vertical columns of pixels, regions of non-generally horizontal edges ("from as much as a 45 degree angle") (column 7, lines 27-34 of Amidei).

**Regarding claim 37:** Amidei discloses determining regions within said vertical columns of pixels as potential generally horizontal edges (column 6, lines 33-37 of Amidei). If in the first step, a horizontal edge is determined between a pixel and the pixel immediately above (column 6, lines 33-37 of Amidei), then the edge is clearly a generally horizontal edge, as opposed to non-generally horizontal edges that must be merged later (column 7, lines 27-34 of Amidei).

**Regarding claim 38:** Amidei discloses modifying said potentially generally horizontal edges as non-generally horizontal edges (column 7, lines 27-34 of Amidei) based upon a spatial determination (column 7, lines 61-65 of Amidei). The potentially generally horizontal edges can be merged at just over a 45 degree angle (column 7, lines 27-34 of Amidei) and then determined to actually be an edge based on a spatial analysis (column 7, lines 61-65 of Amidei). If merged at just

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over a 45 degree angle and determined to be an edge, then a potentially generally horizontal edge is modified to be a non-generally horizontal edge.

**Regarding claim 39:** Amidei discloses that said generally vertical edge is transverse to said horizontal row of pixels (column 6, lines 33-35 of Amidei). A horizontal edge is checked by checking pixels in the vertical direction (column 6, lines 33-35 of Amidei). Therefore, said horizontal edge is transverse to said vertical column of pixels.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amidei (US Patent 5,995,661) in view of Lee (US Patent 5,054,098).

**Regarding claim 2:** Amidei does not disclose expressly that said document is a substantially flat document.

Lee discloses scanning and digitizing a paper document (column 7, lines 16-17 of Lee). As is well-known in the art, a paper document is a substantially flat document.

Amidei and Lee are combinable because they are from the same field of endeavor, namely the detection of document boundaries. At the time of the invention, it would have been

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obvious to a person of ordinary skill in the art to scan a substantially flat document, as taught by Lee, with the system taught by Amidei. The suggestion for doing so would have been that the image backing shown in the figure above (taken from figure 1 of Amidei) is clearly designed for backing a substantially flat object during image scanning. Therefore, it would have been obvious to combine Lee with Amidei to obtain the invention as specified in claim 2.

**Regarding claim 3:** As can clearly be seen in the figure shown above, and in figure 1 of Amidei, the image backing is a cover and is substantially flat. When closed over said object, which is flat, as discussed in the arguments regarding claim 2, said image backing is clearly in a face-to-face relationship with said object.

10. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amidei (US Patent 5,995,661) in view of Lee (US Patent 5,054,098) and Yamanishi (US Patent 5,696,595).

**Regarding claim 4:** Amidei in view of Lee does not disclose expressly a second background color that covers a major portion of said cover.

Yamanishi discloses a background color (white) that covers a major portion of a scanner cover (column 10, lines 53-55 of Yamanishi). Since the scanner cover is white (column 10, lines 53-55 of Yamanishi), then clearly the background color (white) covers a major portion of said scanner cover.

Amidei in view of Lee is combinable with Yamanishi because they are from the same field of endeavor, namely scanning and processing image and document data. At the time of the invention, it would have been obvious to a person of ordinary

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skill in the art to make the background color of the scanner cover of Amidei cover a major portion of said cover, as taught by Yamanishi. The motivation for doing so would have been that the histogram peaks determined by reading a cover with a white background (column 10, lines 55-56 of Yamanishi) are useful in determining density calibrations (column 10, lines 42-46 of Yamanishi). Therefore, it would have been obvious to combine Yamanishi with Amidei in view of Lee to obtain the invention as specified in claim 4.

**Regarding claim 5:** Amidei discloses that said imaging system determines a plurality of boundaries (vertical and horizontal edges) of said object (column 3, lines 10-12 of Amidei).

**Regarding claim 6:** Amidei discloses that said imaging systems determines four boundaries (top horizontal edge, bottom horizontal edge, left vertical edge, right vertical edge) of said object (column 3, lines 10-12 of Amidei).

**Further regarding claim 7:** Yamanishi discloses that said imaging device has a flat surface supporting said object (figure 1(117) and column 3, lines 52-55 of Yamanishi). As is well-known in the art, a document plate is flat.

**Further regarding claim 8:** Yamanishi discloses that said object is paper (column 6, lines 47-52 of Yamanishi).

11. Claims 9-13 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amidei (US Patent 5,995,661) in view of Kowalski (US Patent 5,778,104).

**Regarding claims 9 and 13:** Amidei discloses that said imaging system uses pre-scanned grayscale image data for determining at least one boundary of said object (column 3,

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lines 6-10 of Amidei). As is well-known in the art, the grayscale level of a pixel is the luminance level of the pixel.

Amidei does not disclose expressly that said imaging system converts a first color space of an image obtained from sensing said object to a second color space where the luminance of said image is enhanced over the first color space.

Kowalski discloses converting a first color space of an image obtained from sensing said object (column 3, lines 53-59 of Kowalski) to a second color space (column 3, lines 66-67 of Kowalski), where the luminance of said image is enhanced over the first color space (column 4, lines 2-11 of Kowalski). Computing the luminance values by using different coefficients, and therefore different proportions, of the color components (column 4, lines 2-11 of Kowalski) enhances the luminance values of the first color space.

Amidei and Kowalski are combinable because they are from the same field of endeavor, namely image data scanning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to convert a color document into enhanced luminance values, as taught by Kowalski, in order to detect the boundaries using the imaging system taught by Amidei. The suggestion for doing so would have been that the imaging system of Amidei operates based on the luminance values of the image (column 3, lines 6-10 of Amidei). Therefore, if a color image is to be processed, the color component values need to be converted into luminance values for processing. Therefore, it would have been obvious to combine Kowalski with Amidei to obtain the invention as specified in claim 9.

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**Further regarding claim 10:** Kowalski discloses that said first color space includes a plurality of dimensions (column 3, lines 46-51 of Kowalski) and said second color space includes fewer dimensions than said first color space (column 4, lines 4-11 of Kowalski). There are three color components, such as RGB, in said first color space (column 3, lines 46-51 of Kowalski) and only one color component (luminance) in said second color space (column 4, lines 4-11 of Kowalski).

**Further regarding claim 11:** Kowalski discloses that said first color space is red, green and blue (column 3, lines 51-52 of Kowalski), and said second color space is luminance (column 4, lines 4-11 of Kowalski).

**Regarding claim 12:** Amidei discloses setting a difference threshold for the grayscale values in determining an edge (column 4, lines 62-66 of Amidei).

Amidei does not disclose expressly that said imaging system increases the differences of values in the range of likely document edge values.

Kowalski discloses filtering a grayscale image based on the minimum and maximum luminance values in a neighborhood of pixels (column 4, lines 35-41 of Kowalski).

Amidei and Kowalski are combinable because they are from the same field of endeavor, namely image data scanning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to filter the image data based on the minimum and maximum luminance values, as taught by Kowalski. Therefore, in the system taught by Amidei, the differences of values in the range of likely document edge values would be increased since there is a greater discontinuity in luminance value in the neighborhood of an edge. The



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motivation for doing so would have been to improve the quality of an image which comprise a combination of features (column 3, lines 2-7 of Kowalski). Therefore, it would have been obvious to combine Kowalski with Amidei to obtain the invention as specified in claim 12.

**Regarding claims 22 and 23:** Amidei does not disclose expressly that the result of processing said set of statistical measures are further processed to emphasize spatial regions of increased statistical measure.

Kowalski discloses further processing spatial regions of increased statistical measure to emphasize said regions (column 4, lines 37-39 and lines 56-61 of Kowalski). Filter values are determined for a neighborhood of pixels (column 4, lines 37-39 of Kowalski) based on the statistical measure of said neighborhood (column 4, lines 56-61 of Kowalski).

Amidei and Kowalski are combinable because they are from the same field of endeavor, namely image data scanning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to filter the image data based on the variation between the minimum and maximum luminance values of a group, as taught by Kowalski. Therefore, in the system taught by Amidei, the variation of the luminance values would determine how much emphasis a group would receive, depending on whether or not there is an edge. The motivation for doing so would have been to improve the quality of an image which comprise a combination of features (column 3, lines 2-7 of Kowalski). Therefore, it would have been obvious to combine Kowalski with Amidei to obtain the invention as specified in claims 22 and 23.

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**Regarding claims 24 and 25:** Amidei discloses that the thresholds for the vertical and horizontal edge detections can be set to alternate selected values (column 4, lines 64-67 and column 5, lines 39-40 of Amidei).

Amidei does not disclose expressly that said determining said at least one boundary of said object is based upon a variable threshold value calculated based upon said set of statistical measures.

Kowalski discloses that the filter values of a neighborhood of pixels are variable and are determined based on the statistical measure of a neighborhood of pixels (column 4, lines 37-39 and lines 56-61 of Kowalski).

Amidei and Kowalski are combinable because they are from the same field of endeavor, namely image data scanning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to set the threshold taught by Amidei variably based on said set of statistical measures, as taught by Kowalski. The motivation for doing so would have been to improve the quality of an image which comprise a combination of features (column 3, lines 2-7 of Kowalski), and would therefore require a variable threshold. Therefore, it would have been obvious to combine Kowalski with Amidei to obtain the invention as specified in claims 24 and 25.

**Regarding claims 26 and 27:** Amidei does not disclose expressly that said variable threshold value is calculated based upon a percentage of the maximum observed statistical measure.

Kowalski discloses calculating the variable filter values of the neighborhood of pixels based upon a percentage of the maximum observed statistical measure (column 4, lines 56-61 of Kowalski). The percentage difference between the maximum and

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minimum luminance values of the neighborhood of pixels determines the filter value since Lmin changes linearly from 1/9 to 1 as said difference increases (column 4, lines 56-61 of Kowalski). In other words, as percentage difference between Lmin and Lmax increases, the variable filter values increase.

Amidei and Kowalski are combinable because they are from the same field of endeavor, namely image data scanning and processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to set the variable threshold discussed in the arguments regarding claims 24 and 25 based on the percentage of the statistical measures, as taught by Kowalski. The motivation for doing so would have been to improve the quality of an image which comprise a combination of features (column 3, lines 2-7 of Kowalski), and would therefore require a variable threshold. Therefore, it would have been obvious to combine Kowalski with Amidei to obtain the invention as specified in claims 26 and 27.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson  
Examiner  
Art Unit 2624

JAT  
5 November 2004



THOMAS D  
~~THOMAS~~ LEE  
PRIMARY EXAMINER